

# ECONOMIC ASPECTS OF INFORMATION SECURITY IN A NETCENTRIC WORLD

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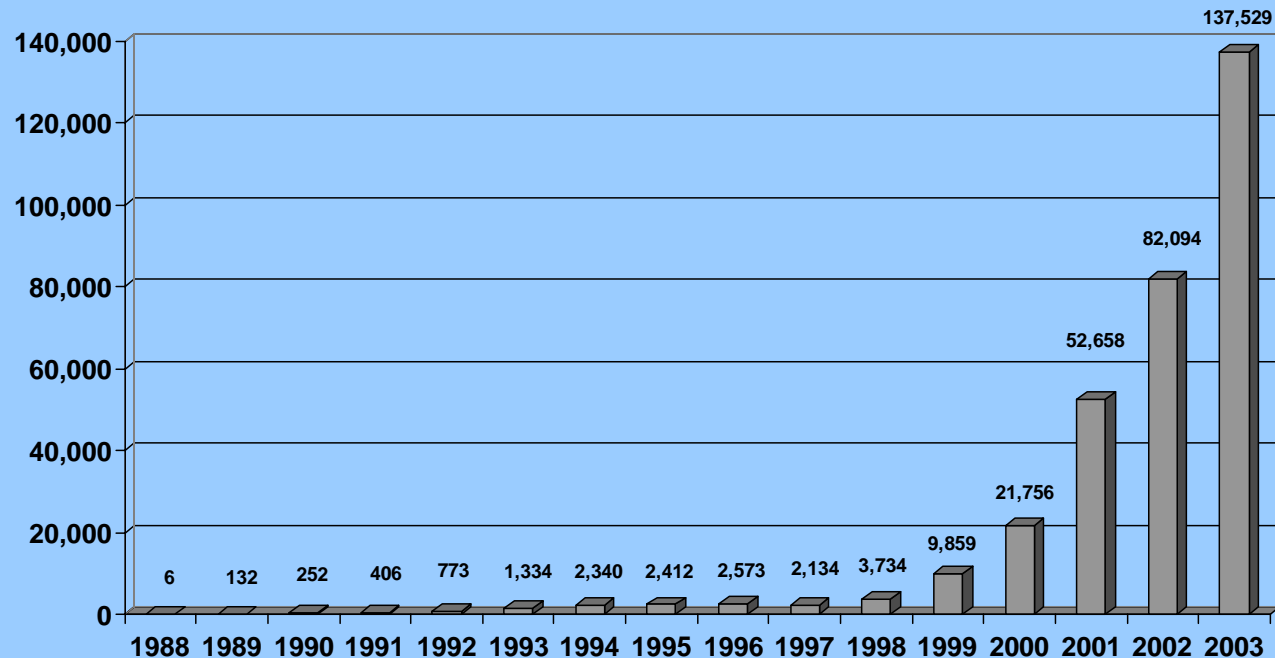
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# Information Security & The Internet

Security incidents are a critical concern for the future of the Internet (source of data is CERT® Coordination Center at [www.cert.org](http://www.cert.org))



# Information Security & The Internet

- There are many aspects to this concern:
  - There are technical aspects that address such issues as cryptology, access controls, and intrusion detection systems.
  - There are also behavioral aspects that address the way human actions affect security breaches.
  - Economic aspects of information security are also a critical concern to the future of the Internet.

Unfortunately, until recently, there has been scant research on the Economic Aspects

# Purpose of My Talk

- Point out some of the recent research that relates to the economic aspects of information security, and
- Discuss the implications of this research
- Discuss research in progress

# Recent Research and Implications

## I. Economic Impact Of Security Breaches

- Conventional Wisdom
- Previous Studies of Explicit Costs to Firms

# Results

- Overall Impact of Security Breaches  
Mixed, Results Depend on Methodology
- Split Sample
  - Confidentiality Breaches  
Significant (average 5% of Capitalization)
  - Non-Confidentiality Breaches  
Not Significant

# Recent Research and Implications

## II. Investments In Information Security

- Economic Analysis of Incremental Benefits and Costs
- Consider Security Breach Function (i.e., vulnerabilities, threats, and productivity of investments) & Potential Loss
- ROI and Security Investments
- Consider Option Value of Investments
- Consider Risk Management Concepts (e.g., Insurance)

# Results

- Under a wide range of circumstances, firm should spend substantially less than the expected loss (i.e., no more than  $1/3$ )
- ROI and investments in information security: myths vs. realities
- Wait-and-see may make sense
- Cyber insurance as a risk-management tool



# Recent Research and Implications

## III. Information Sharing and Homeland Security

- Numerous Information sharing organizations have been established (e.g., ISACs, INFRAGARD, CSORTS)
- The FedGov has recognized the value of this sharing and encouraged the formation of information sharing organizations to improve the security of critical infrastructures

# Results

- Information sharing can lead to an increased level of information security at lower investment level
- Without appropriate incentives, many firms become “free riders”

# Research in Progress

- **Budgeting Process for Information Security**
- **Information Security Audits and Firm Value**
- **Postauditing Investments in Information Security**

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